Geoscientific
Model Development
Discussions

Interactive comment on "gpuPOM: a GPU-based Princeton Ocean Model" *by* X. Huang et al.

Anonymous Referee #2

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This paper gives an excellent demonstration of how to convert an ocean model, in whole, to be run on GPUs. The paper is clearly written, and sufficient technical details are given to inform others of their work. I am not an expert in GPU programming, but I was able to understand their descriptions and appreciate the work they did to optimize the code, for example, overlaying i/o and compute.

The authors give a good description of the mpiPOM ocean model in section 2. I am very experienced with ocean models, and their choice of settings and test problem all seam reasonable.

Minor comments: Figure 7 is poorly labeled. Units are missing. I assume SSH is contours, SST is colors, and currents are arrows, but it does not say. I would prefer for SSH and SST to be in two separate panels.

The fact that four GPUs are as fast as 55 or 95 cpus is really astonishing. I don't follow

the explanation of this speed-up in top of 7671. It says mpiPOM is memory bound, so CPU:GPU performance is 1:10. Is the remaining factor of 5 all due to memory optimizations? Are those the ones already described in the text?

In conclusion, list number of cores rather than 34 nodes, as the reader would not know the number of cores per node.

Interactive comment on Geosci. Model Dev. Discuss., 7, 7651, 2014.